

CLAIMS

1. Sample inspection apparatus comprising a pair of magnet assemblies located in a common cryostat and surrounding respective bores so as to define corresponding working regions in the bores; a first sample positioning mechanism which can be inserted in one of the bores to bring a sample into the corresponding working region, the magnetic field in that working region having a homogeneity or profile suitable for performing a NMR experiment; and a second sample positioning mechanism which can be inserted in the other of the bores to bring a sample into the other working region, the magnetic field in that working region having a homogeneity or profile suitable for performing a different experiment on the sample.
2. Apparatus according to claim 1, wherein the external field generated by each magnet assembly is no greater than 0.0005T at the centre of the working region defined by the other magnet assembly.
3. Apparatus according to claim 1 or claim 2, wherein each magnet assembly is actively shielded.
4. Apparatus according to claim 3, wherein each magnet assembly has end shielding coils.
5. Apparatus according to any of the preceding claims, wherein the magnet assemblies are arranged with their bores coaxial to define a common bore.
6. Apparatus according to claim 5, wherein the sample positioning mechanisms are insertable into opposite ends of the common bore.
7. Apparatus according to claim 5 or claim 6, wherein the magnet assemblies comprise a single magnet.
8. Apparatus according to any of claims 1 to 4, wherein the magnet assemblies are arranged with their bores substantially parallel and side by side.
9. Apparatus according to any of the preceding claims, wherein the magnet assemblies are controllable to generate

the required magnetic fields in each working region simultaneously.

10. Apparatus according to any of the preceding claims, wherein the bores are at room temperature.

11. Sample inspection apparatus comprising a magnet assembly located in a cryostat and surrounding a bore so as to define a working region in the bore; a first sample positioning mechanism which can be inserted in the bore to bring a sample into the working region, the magnet assembly being controllable to generate a magnetic field in the working region having a homogeneity or profile suitable for performing a NMR experiment; and a second sample positioning mechanism which can be inserted in the bore to bring a sample into the working region, the magnet assembly being controllable to generate a magnetic field in the working region having a homogeneity or profile suitable for performing a different experiment on the sample.

12. Apparatus according to claim 11, wherein the sample positioning mechanisms are insertable into opposite ends of the bore.

13. Apparatus according to claim 11 or claim 12, wherein the bore is at room temperature.

14. Apparatus according to any of the preceding claims, further comprising a system for supplying portions of a sample to each sample positioning mechanism from a common source.

15. Apparatus according to claim 14, wherein the common source comprises a liquid chromatograph.

16. Apparatus according to any of the preceding claims, wherein the second sample positioning mechanism is suitable for use in ion cyclotron resonance mass spectroscopy.